

The State of Trauma in North Carolina



NC History- What drives our system

- American College of Surgeons Committee on trauma State assessment 2005
- Trauma Agenda for the future
- HRSA Model Trauma System



Tasks

- Update the state trauma registry- Done
- Hire State trauma registrar- Done
- Restructure STAC-Done
- Write 5 year strategic plan for development –Done
- Evaluate current system for economic impact- Done



Tasks

- Analyze study and prepare report- In progress
- Obtain access to the NC DETECT ED data- Done
- Review and revise rules- Done
- Identify areas which require legislative changes- Done



Key Issues in Developing an Inclusive Trauma System

- Disaster Preparedness
- Multidisciplinary approach
- Coordination of resources and services- including injury prevention, pre-hospital care, acute care facilities, and post-hospital care.
- Reimbursement, funding and legislation

What are the threats?

- Trauma Center to Close; O.C. Care Crisis Seen
- Region's Trauma Centers Facing Crisis Status
- County Trauma System Confronts a New Crisis: Scaling Back to Survive
- L.A. council asks supervisors to delay trauma center closure
- Trauma center closure may be life-or-death decision for patients

NSCOT study

- National Study for Cost and Outcomes of Trauma
- Study of 69 hospitals comparing outcomes and costs of TC and NTC
- Study included 6 NC Hospitals

NC Hospitals in NSCOT study



NC Hospitals in NSCOT Study

1. Cape Fear Valley Medical Center
2. Carolinas Medical Center-North East
3. Carolinas Medical Center-University
4. Forsyth Memorial Hospital
5. Gaston Memorial Hospital
6. North Carolina Baptist Hospital

NC Trauma Centers

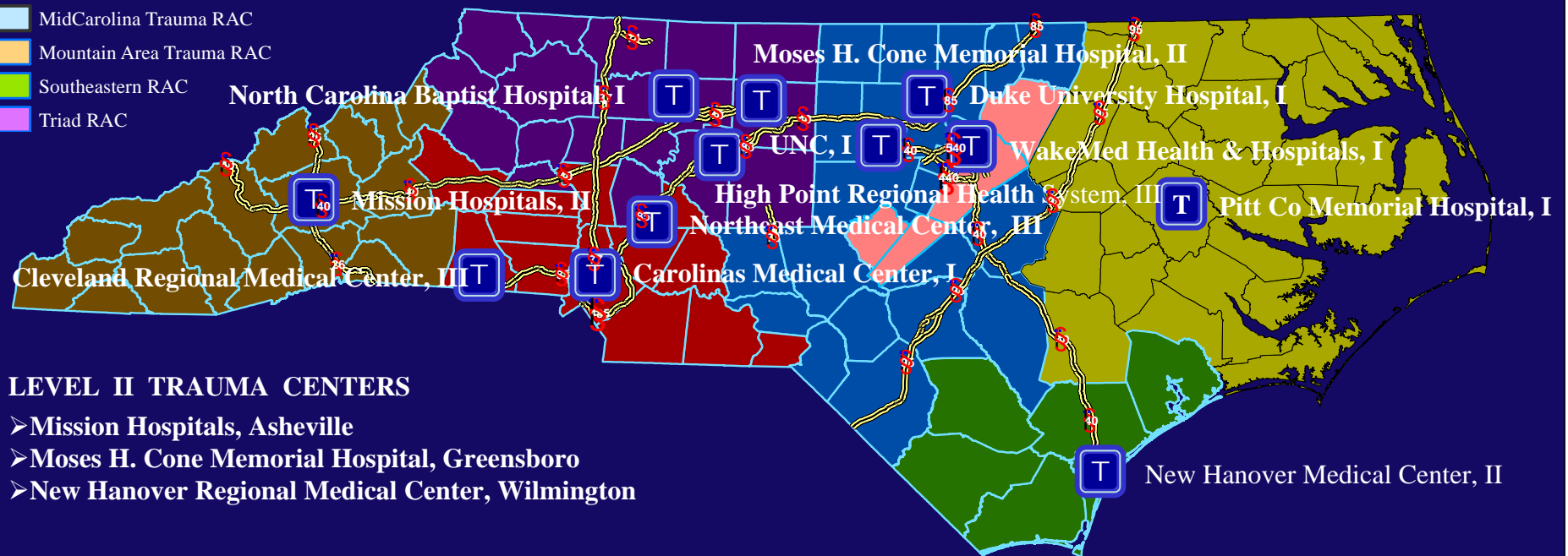
RAC Affiliations

RAC

- Capital RAC
- Duke RAC
- Eastern RAC
- Metrolina Trauma Adv. Com.
- MidCarolina Trauma RAC
- Mountain Area Trauma RAC
- Southeastern RAC
- Triad RAC

LEVEL I TRAUMA CENTERS

- Carolinas Medical Center, Charlotte
- Duke University Hospital, Durham
- North Carolina Baptist Hospital, Winston-Salem
- Pitt County Memorial Hospital, Greenville
- University of NC (UNC) Hospitals, Chapel Hill
- WakeMed Health & Hospitals, Raleigh Campus



LEVEL II TRAUMA CENTERS

- Mission Hospitals, Asheville
- Moses H. Cone Memorial Hospital, Greensboro
- New Hanover Regional Medical Center, Wilmington

LEVEL III TRAUMA CENTERS

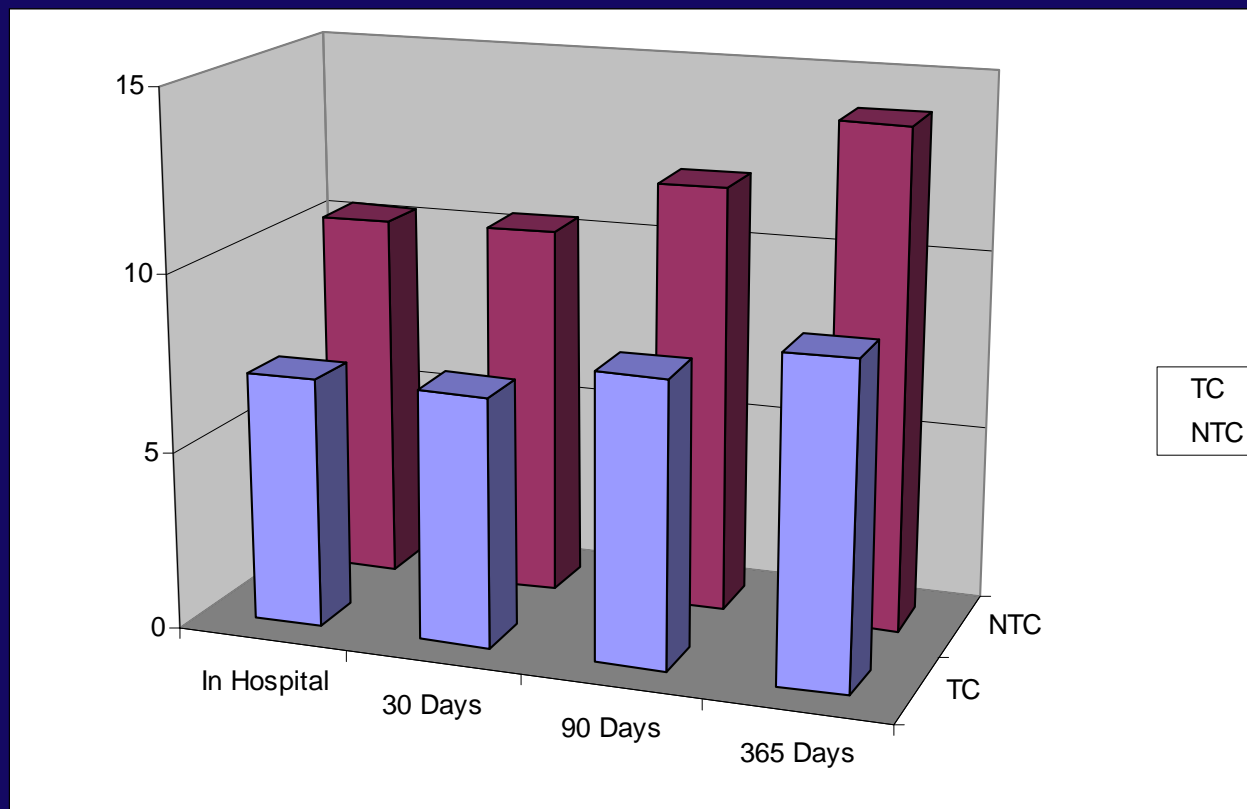
- Cleveland Regional Medical Center, Shelby
- High Point Regional Health System, High Point
- Northeast Medical Center, Concord

0 12.5 25 50 75 100 Miles

NSCOT Study Results

Risk of dying: 25% lower in trauma centers

The overall risk of dying is 25% less in trauma centers compared to non-trauma centers.

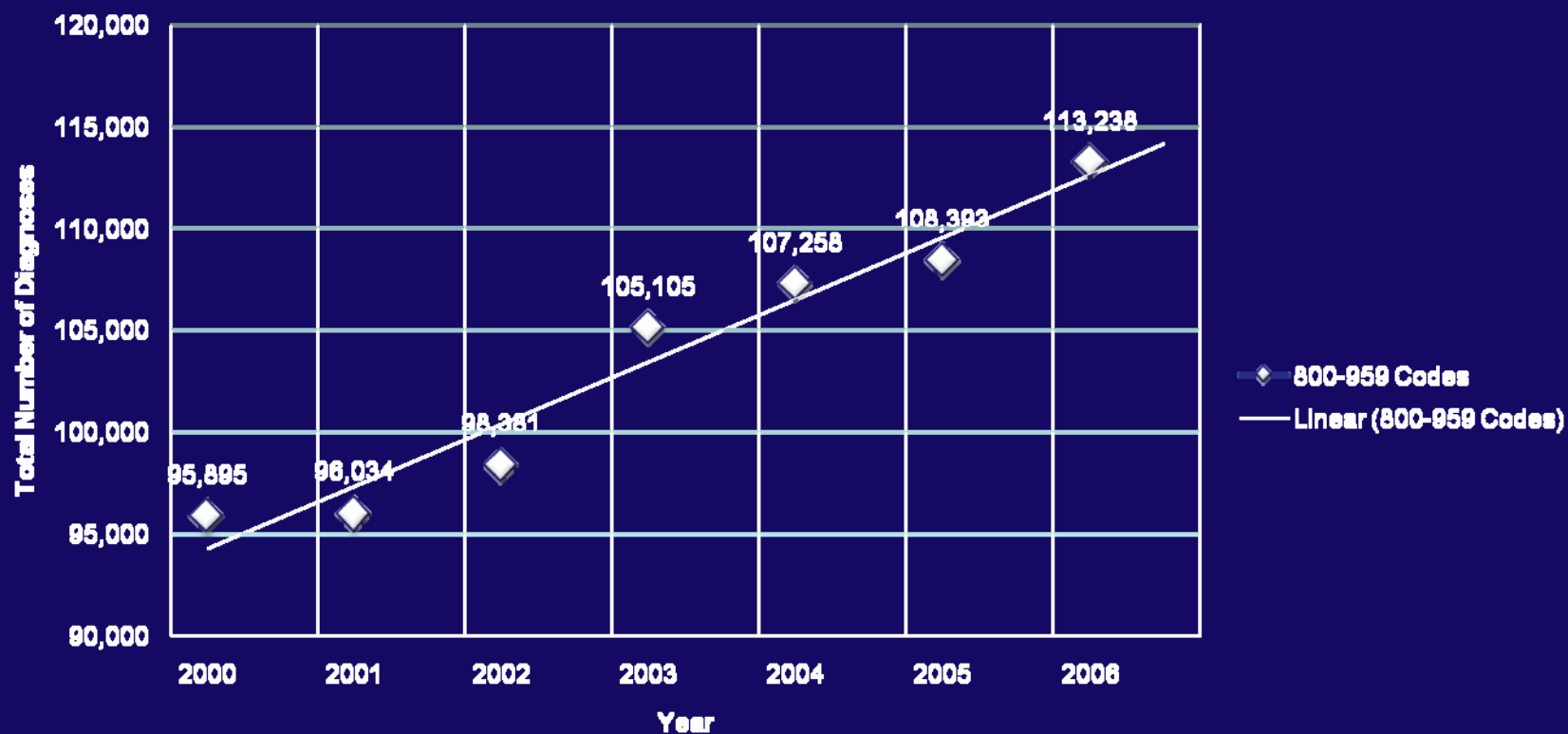


NSCOT Study Conclusion

“Our findings show that the risk of death is significantly lower when care is provided in a trauma center than in a non–trauma center and argue for continued efforts at regionalization.”

Trauma in NC

North Carolina Trauma Diagnosis (ICD-9 800-959) 2000-2006



Source: Healthcare Cost and Utilization Project (HCUP). 1998-2004. AHRQ, Rockville, MD.

N.C. INJURY PYRAMID

DEATHS
= 8,455

HOSPITAL
ADMISSIONS
= 156,379

EMERGENCY
DEPARTMENT VISITS
= 646,423

- The more severe the case, the higher the case will be on the pyramid.
- There is a greater number of patients that seek care at outpatient clinics, are cared for in the field by EMS personnel, or do not seek care at all.

Leading Causes of Death in NC-2005

Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
1	Short Gestation 211	Uninten tional Injury 37	Uninten tional Injury 40	Uninten tional Injury 45	Uninten tional Injury 555	Uninten tional Injury 560	Uninten tional Injury 597	Cancer 1,622	Cancer 3,327	Heart Disease 13,855	Heart Disease 17,765
2	Congenital Anomalies 182	Homicide 15	Heart Disease 8	Cancer 13	Homicide 166	Homicide 167	Cancer 442	Heart Disease 1,250	Heart Disease 2,076	Cancer 11,165	Cancer 16,724
3	Maternal Pregnancy Comp. 91	Congenital Anomalies 14	Cancer 7	Homicide 8	Suicide 113	Suicide 139	Heart Disease 405	Uninten tional Injury 622	Chronic Low. Respiratory Disease 461	Cerebro- vascular 4084	Cerebro- vascular 4,861

Source: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.

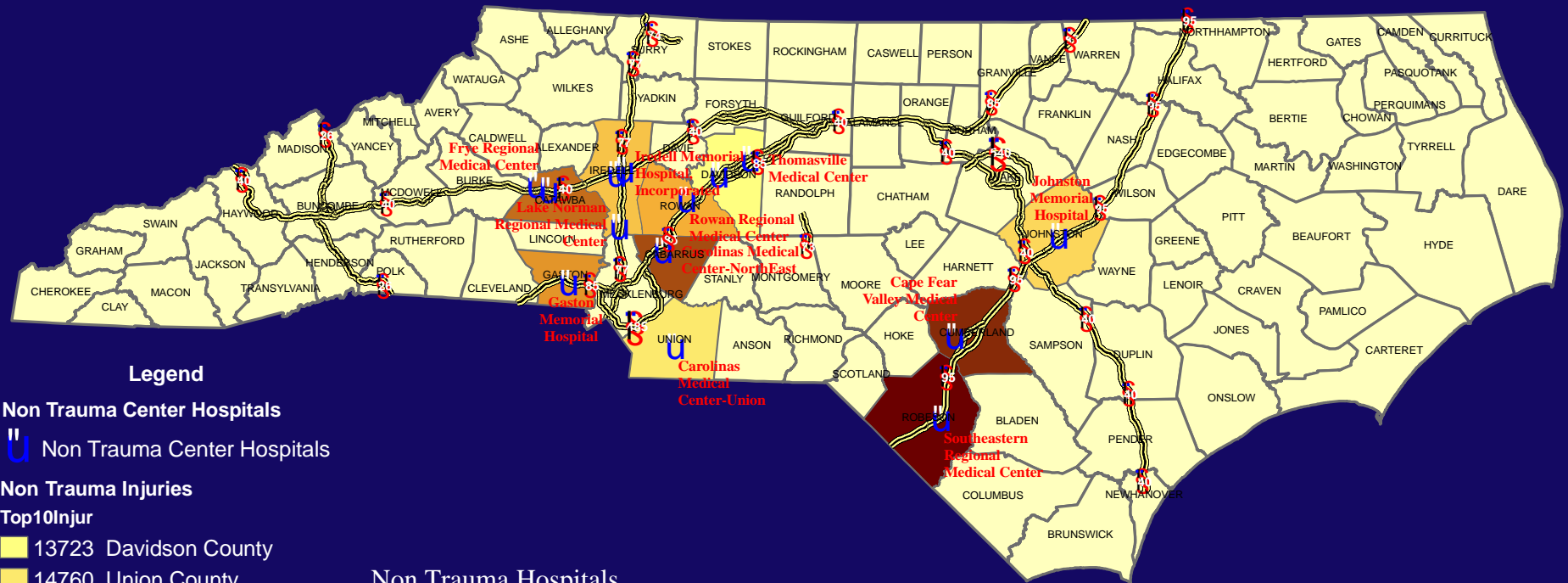
Years of Potential Life Lost Ranked by Cause – North Carolina 2000

Cause	YPLL	Number of Deaths	Average YPLL per Death	Rank on Number of Deaths
All Causes	1,181,176	71,732	16.5	
Cancer	259,318	15,747	16.5	2
Heart Disease	254,914	19,649	13.0	1
All Injuries	179,394	5,072	35.4	
Unintentional MV Injuries	65,943	1,635	40.3	9
Other Unintentional Injuries	48,644	1,833	26.5	7
Suicide	34,847	952	36.6	12
Homicide	29,960	652	46.0	14
Cerebrovascular Disease	62,794	5,692	11.0	3
Chronic Lower Respiratory Disease	47,992	3,695	13.0	4
Peri-natal Conditions	45,474	602	75.5	15
Diabetes Mellitus	32,091	2,078	15.4	5
Pneumonia and Influenza	21,065	1,936	10.9	6
Chronic Liver Disease and Cirrhosis	18,297	784	23.3	13
Birth Defects	18,052	305	59.2	17
HIV	17,505	462	37.9	16
Nephritis/Nephrotic Syn./Nephrosis	17,481	1,311	13.3	10
Septicemia	14,711	1,047	14.1	11
Alzheimer's Disease	13,272	1,725	7.7	8
SIDS	7,182	95	75.6	18
All Other Causes	171,632	11,532	14.9	

Pediatric Trauma

- More deaths from injuries than the next 10 leading causes combined.
- Medicaid/Government dollars pay 39% of the bill.

10 NC Counties with Highest Rate of Injuries With No Trauma Centers



Legend

Non Trauma Center Hospitals

H Non Trauma Center Hospitals

Non Trauma Injuries

Top10Injur

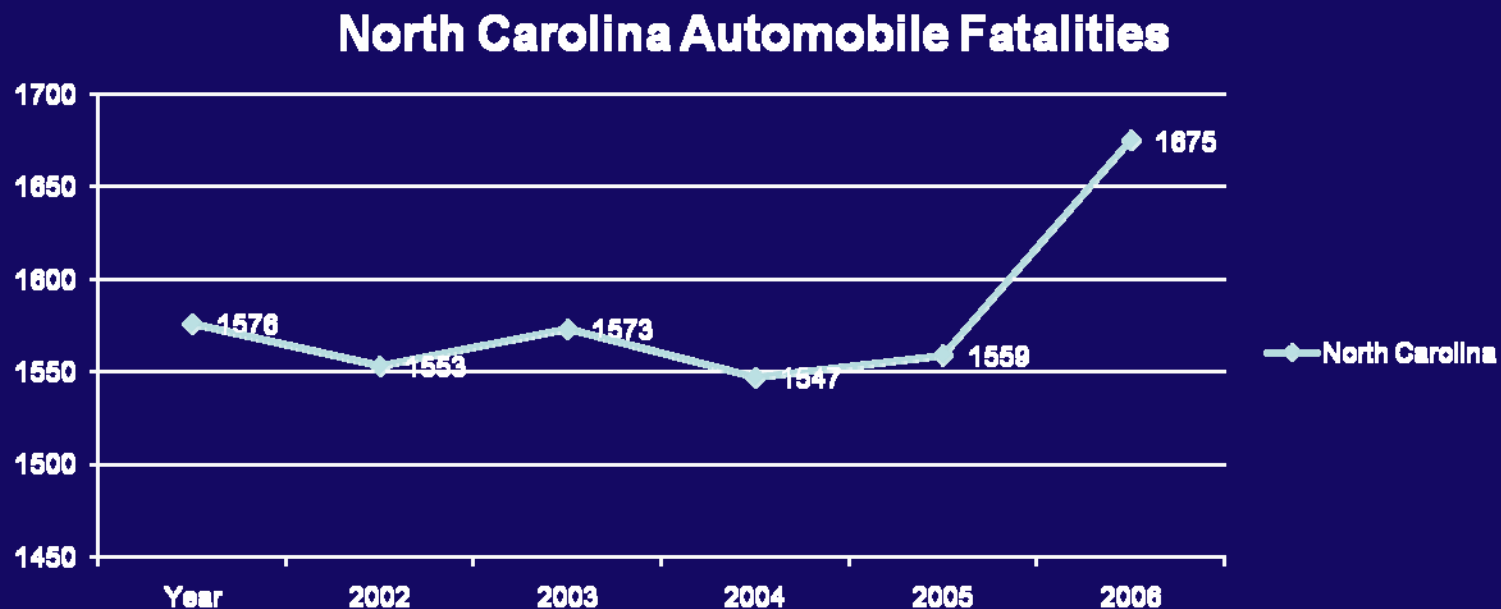
- 13723 Davidson County
- 14760 Union County
- 16435 Johnston County
- 17323 Iredell County
- 17461 Rowan County
- 17741 Gaston County
- 18633 Catawba County
- 20284 Cabarrus County
- 20586 Cumberland County
- 21013 Robeson County

Non Trauma Hospitals

1. Thomasville Medical Center
2. Davis Regional Medical Center
3. Carolinas Medical Center-Union
4. Southeastern Regional Medical Center
5. Catawba Valley Medical Center
6. Iredell Memorial Hospital, Incorporated
7. Rowan Regional Medical Center
8. Carolinas Medical Center-NorthEast
9. Cape Fear Valley Medical Center
10. Frye Regional Medical Center
11. Gaston Memorial Hospital
13. Johnston Memorial Hospital
14. Lexington Memorial Hospital
15. Lake Norman Regional Medical Center

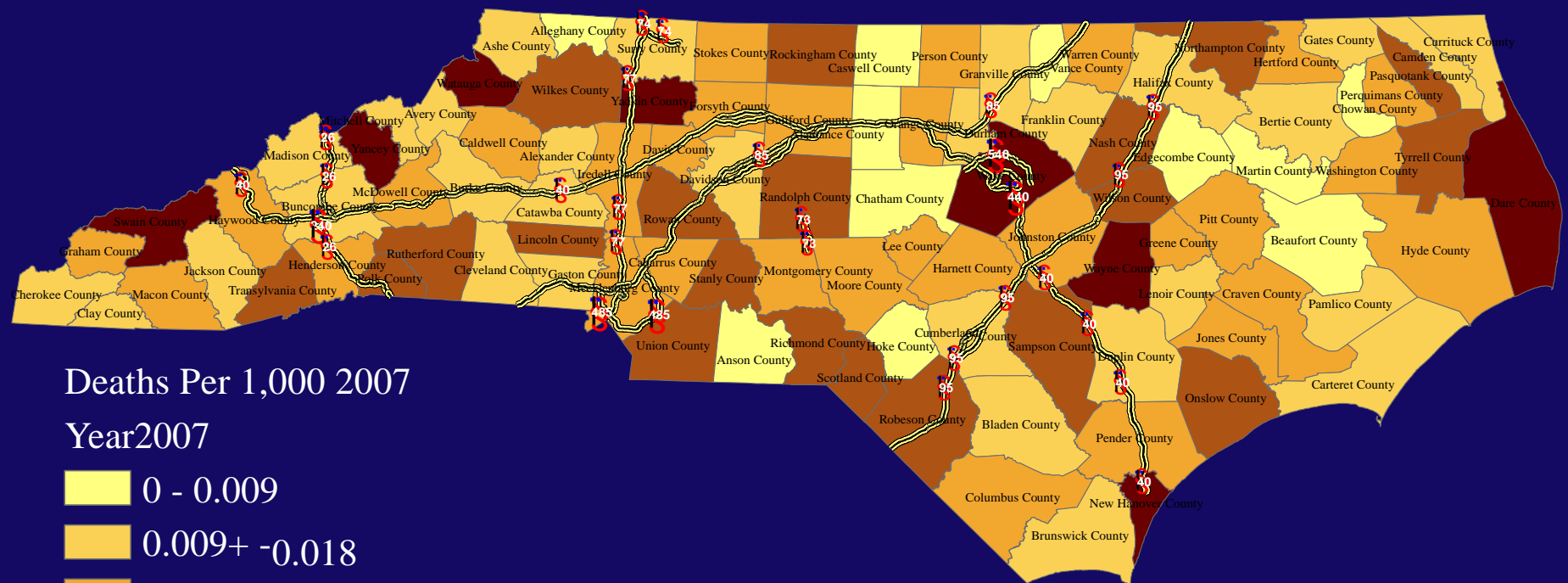
NC Automobile Fatalities

- In 2007, NC had the greatest increase in total deaths by automobile than any other state.

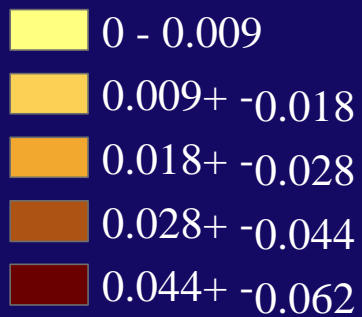


Source: Fatality Analysis Reporting System (FARS)

NC Automobile Fatalities per 1000 for 2007



Deaths Per 1,000 2007
Year 2007

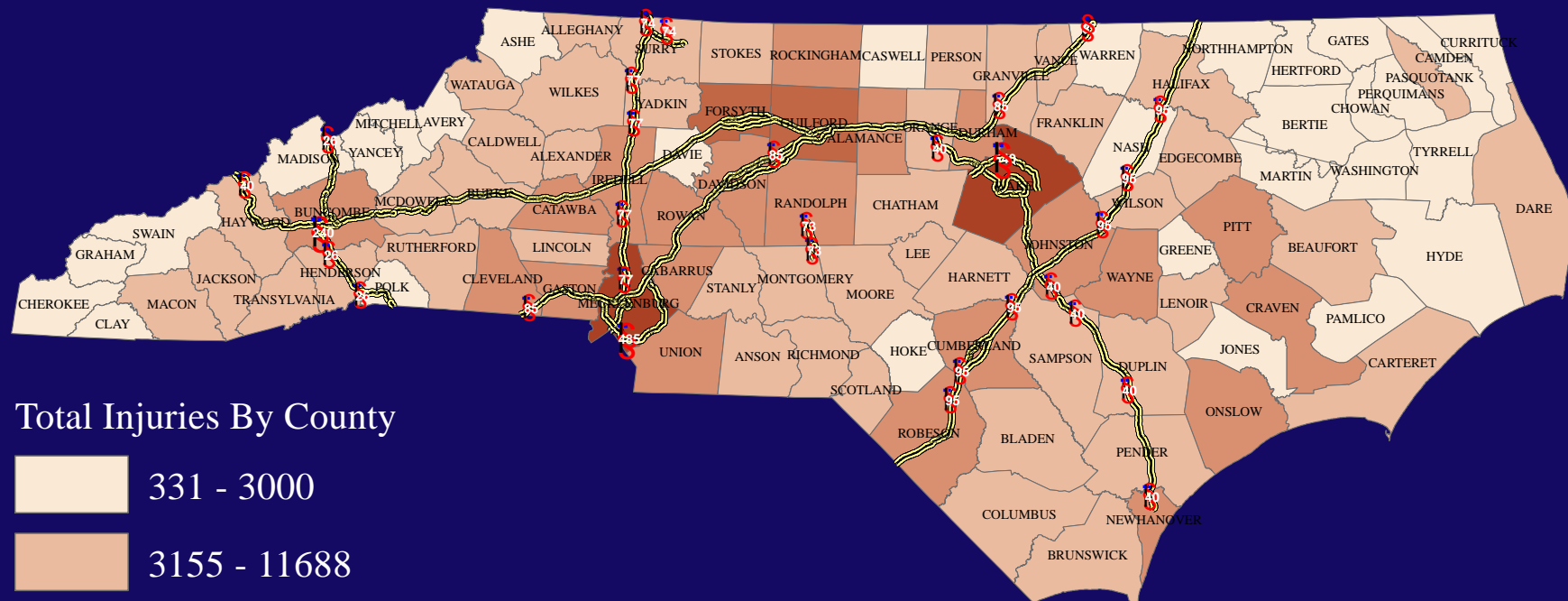


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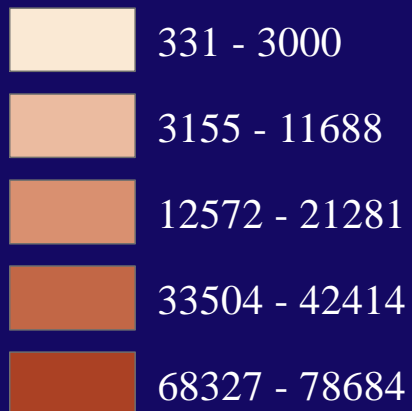
Automobile Fatalities

- In 2007, automobile fatalities decreased 3.3% in the U.S., mostly because of less miles driven.
- In North Carolina there is a much higher automobile fatality rate in counties that are a farther distance to a trauma center or a helicopter.

Injury Map by county



Total Injuries By County

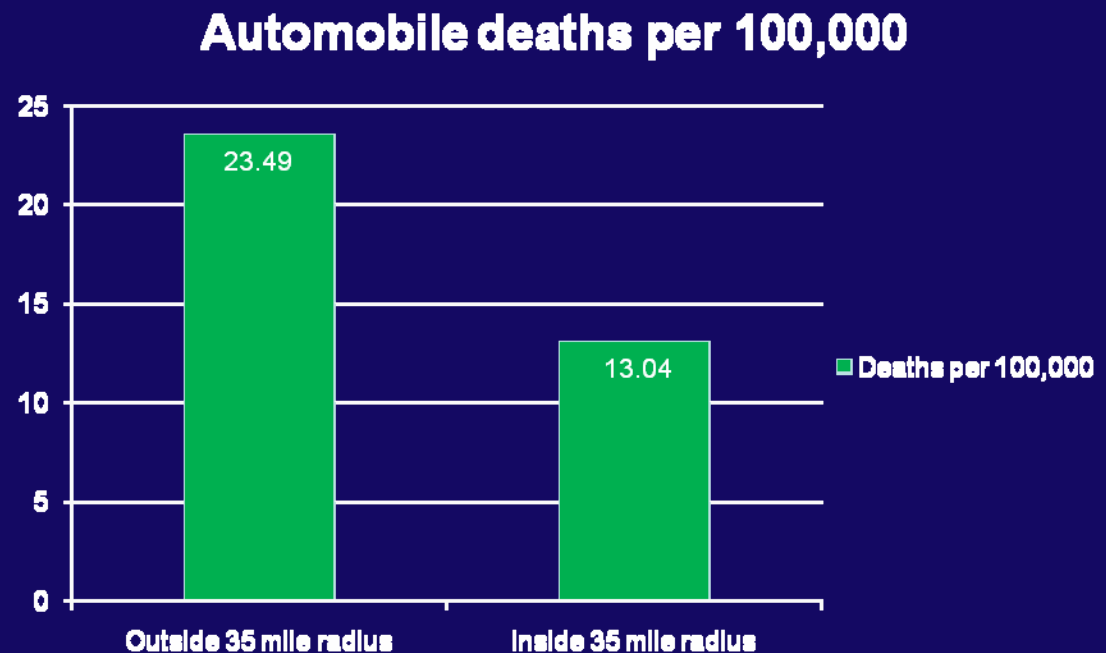


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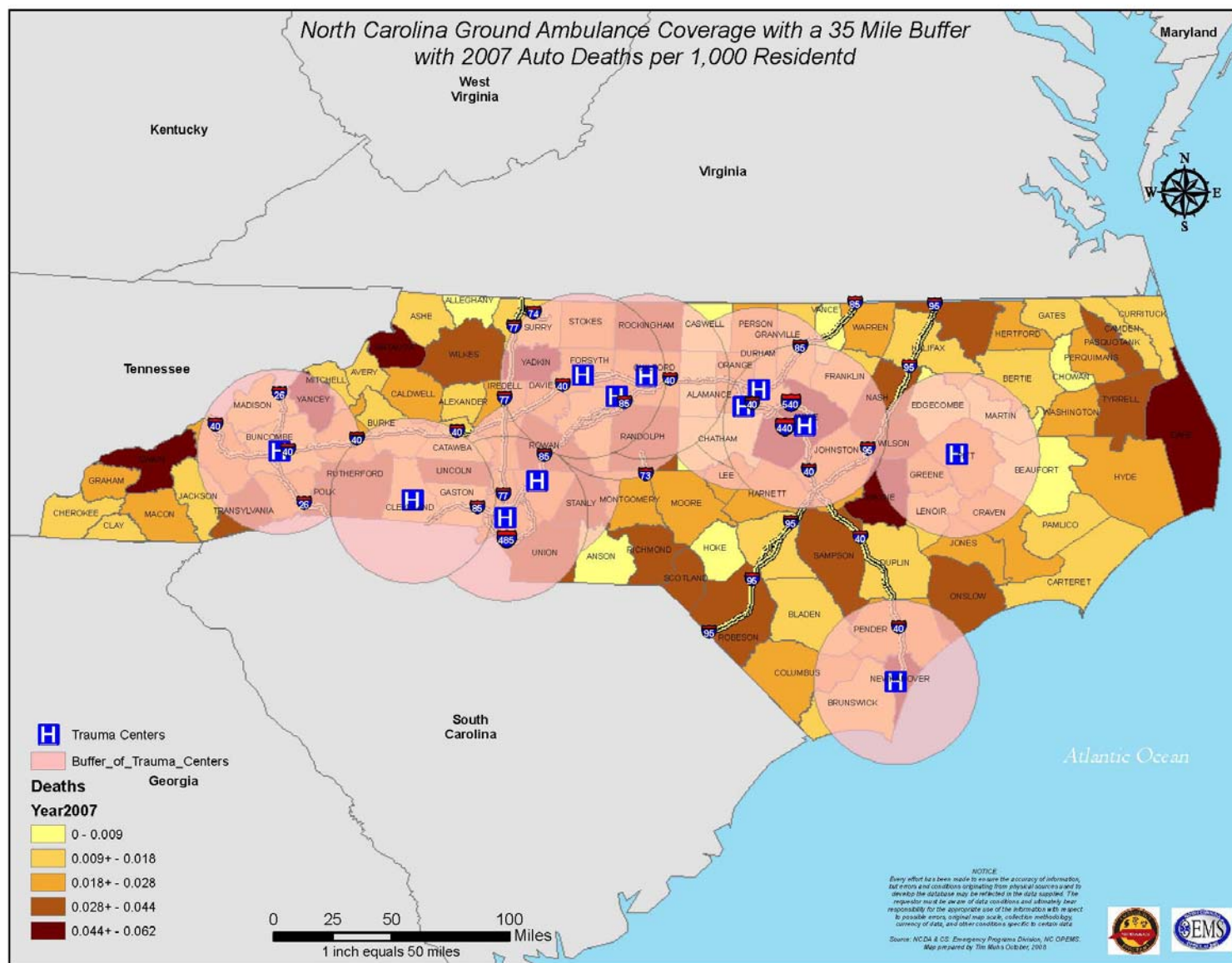
Automobile Fatalities

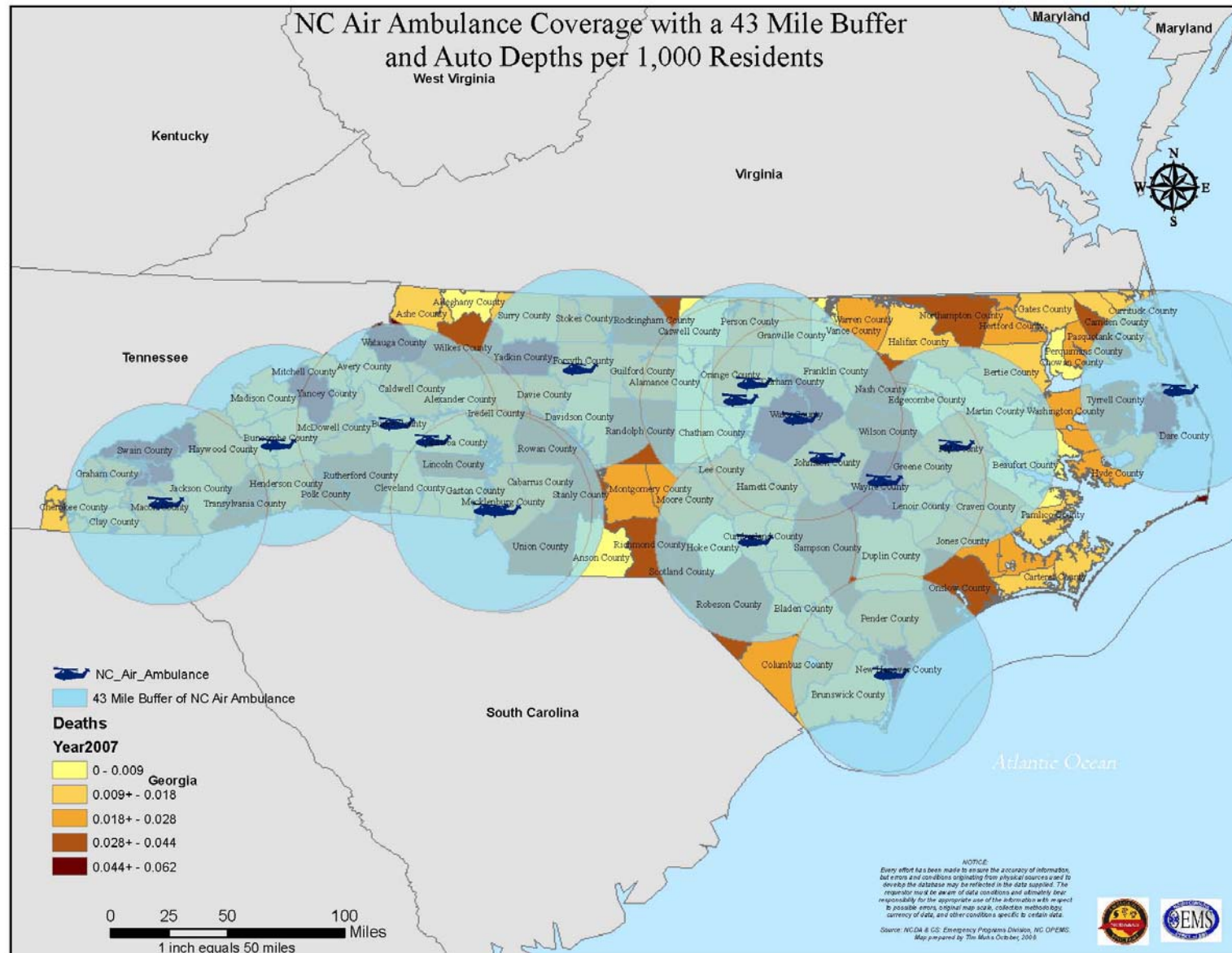
Examining crash data from 2002-2007 comparing trauma center counties to non-trauma center counties.

Outside a 35 mile radius from a trauma center, the number of deaths per capita increases 80%.



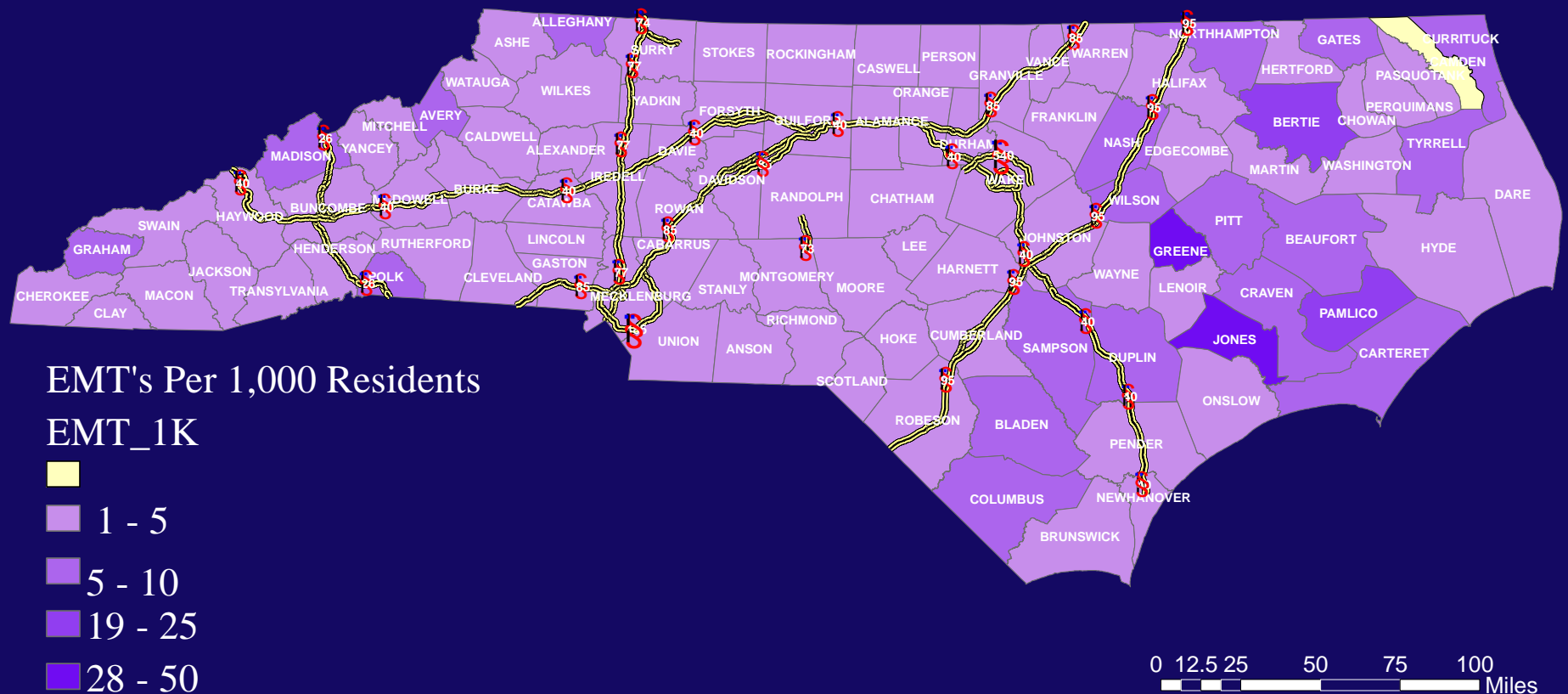
Counties with the highest automobile fatality rates are outside the golden hour.





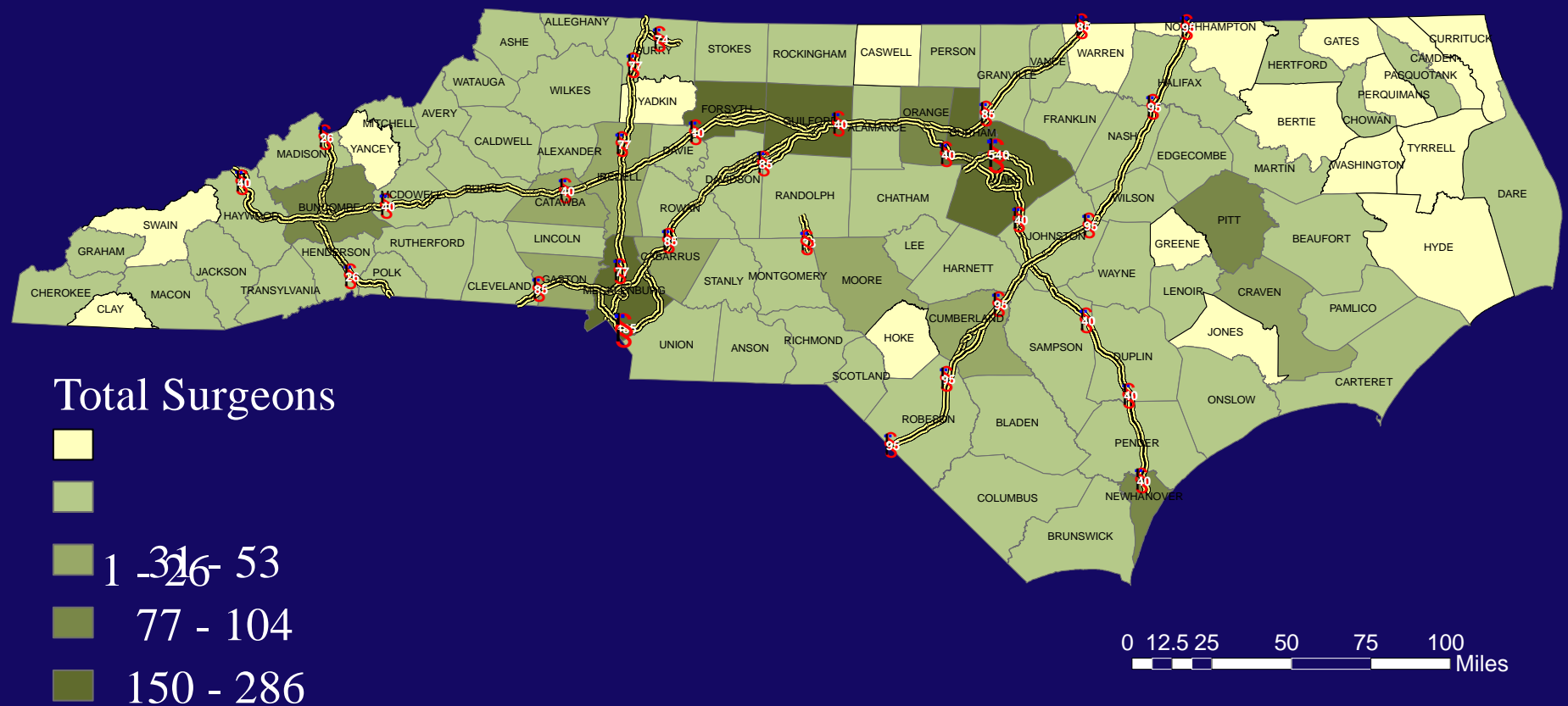
Trauma System Effectiveness

In 2007 the ratio of paramedics to population in North Carolina was 1/468 in urban counties and 1/252 in rural counties. The number of paramedics/100 sq. mi. ranged from 0.25 (Tyrrell) to 89.5 (Durham). Median ratio is 14.82.



Total Number of Surgeons (All Specialties)

Costs & Funding

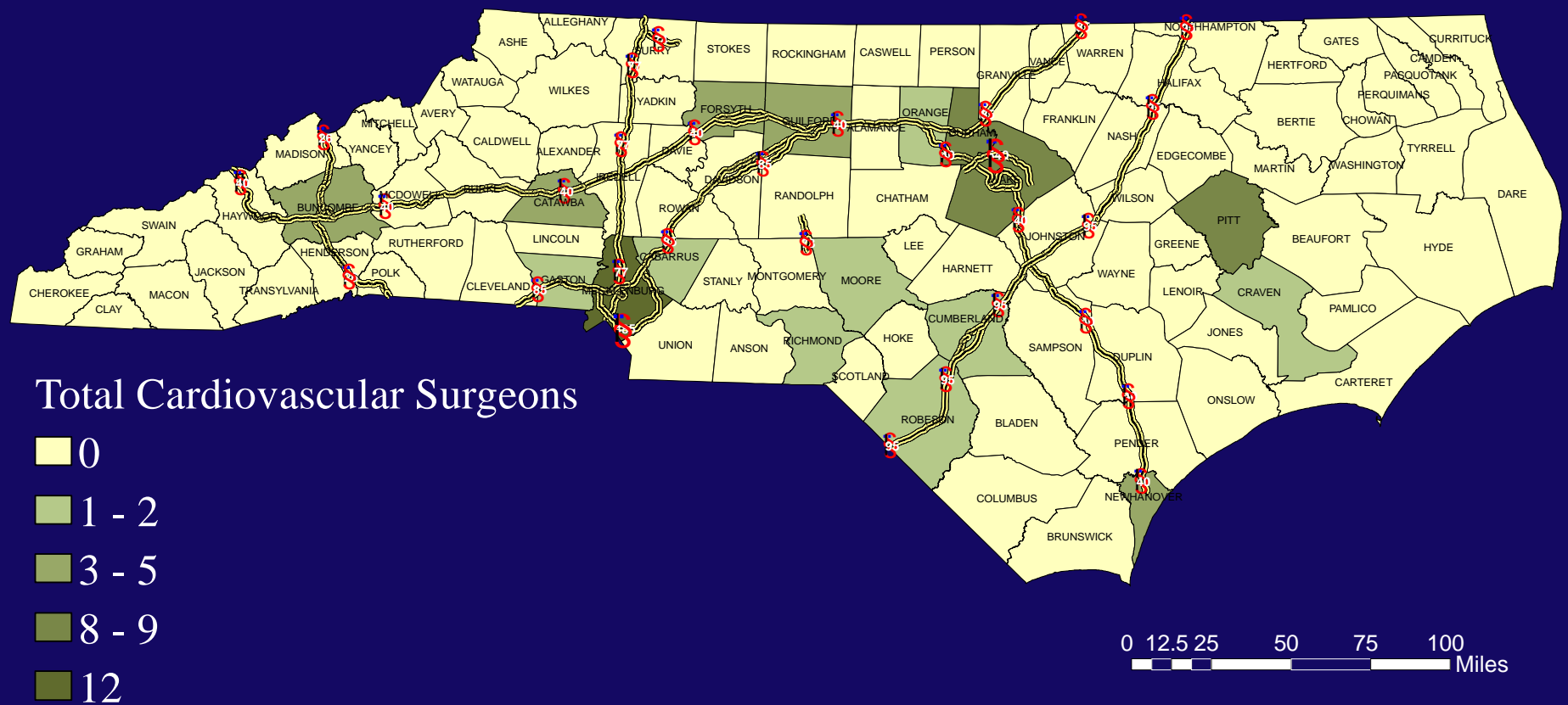


Source: North Carolina Health Professions Data System (HPDS)

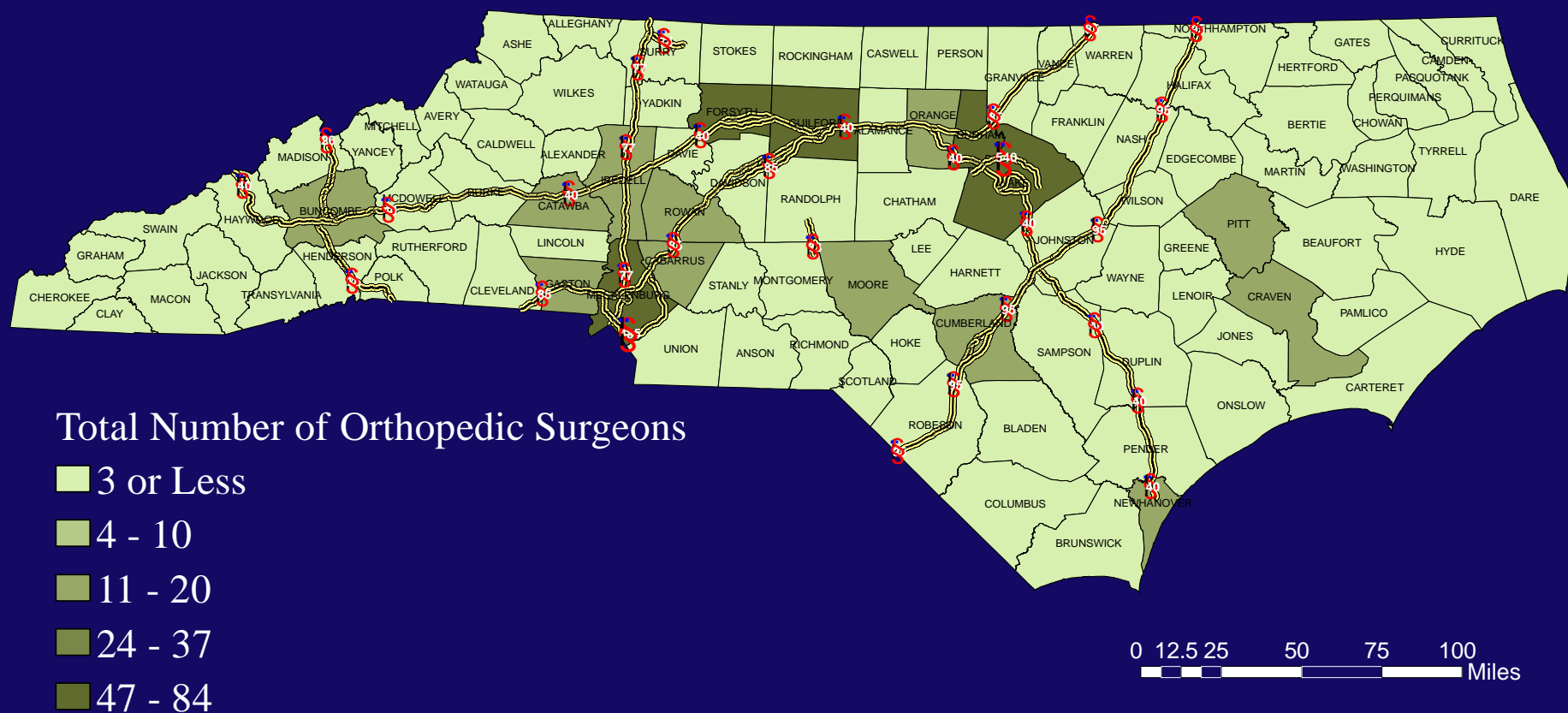
Total Number of Hand Surgeons.



Total Number of Cardiovascular Surgeons

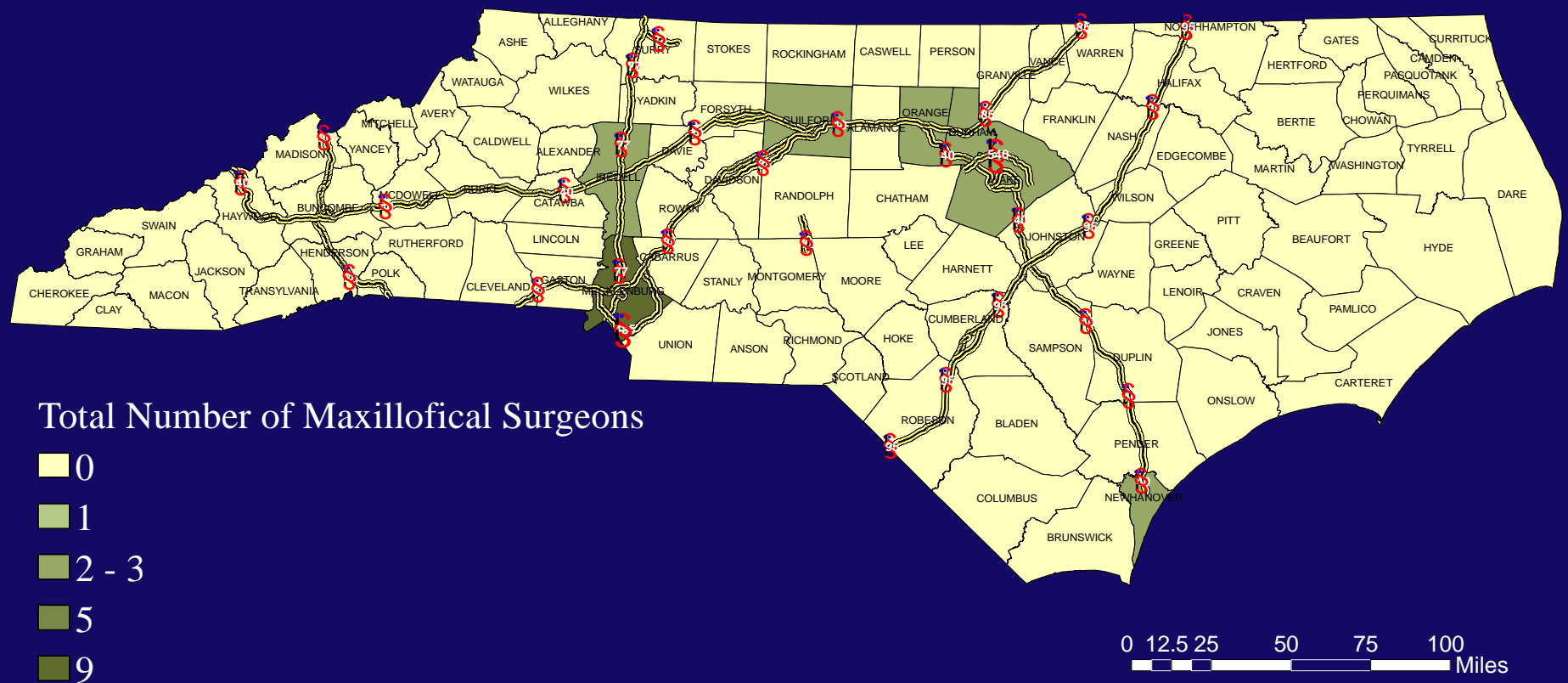


Total Number of Orthopedic Surgeons



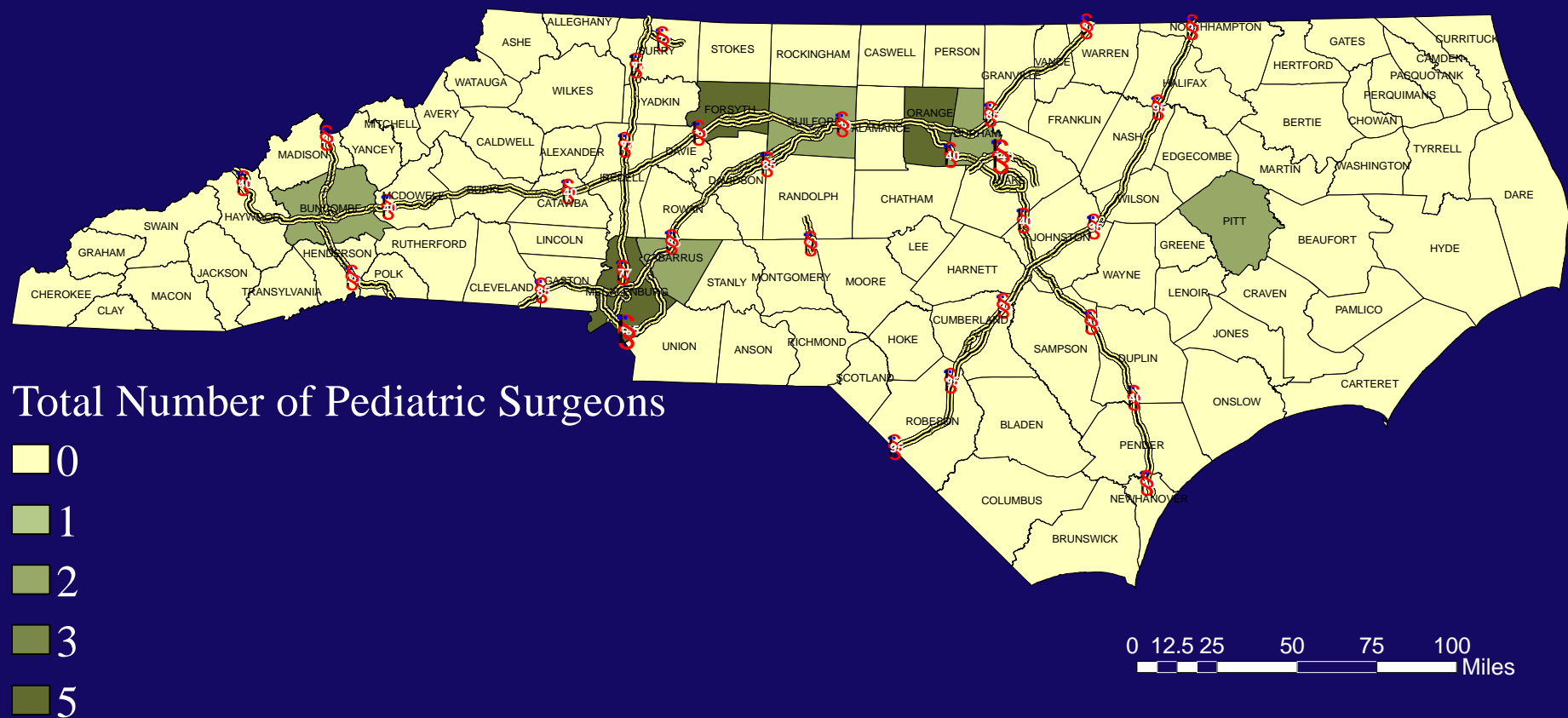
Source: North Carolina Health Professions Data System (HPDS)

Total Number of Maxillofacial Surgeons



Source: North Carolina Health Professions Data System (HPDS)

Total Number of Pediatric Surgeons



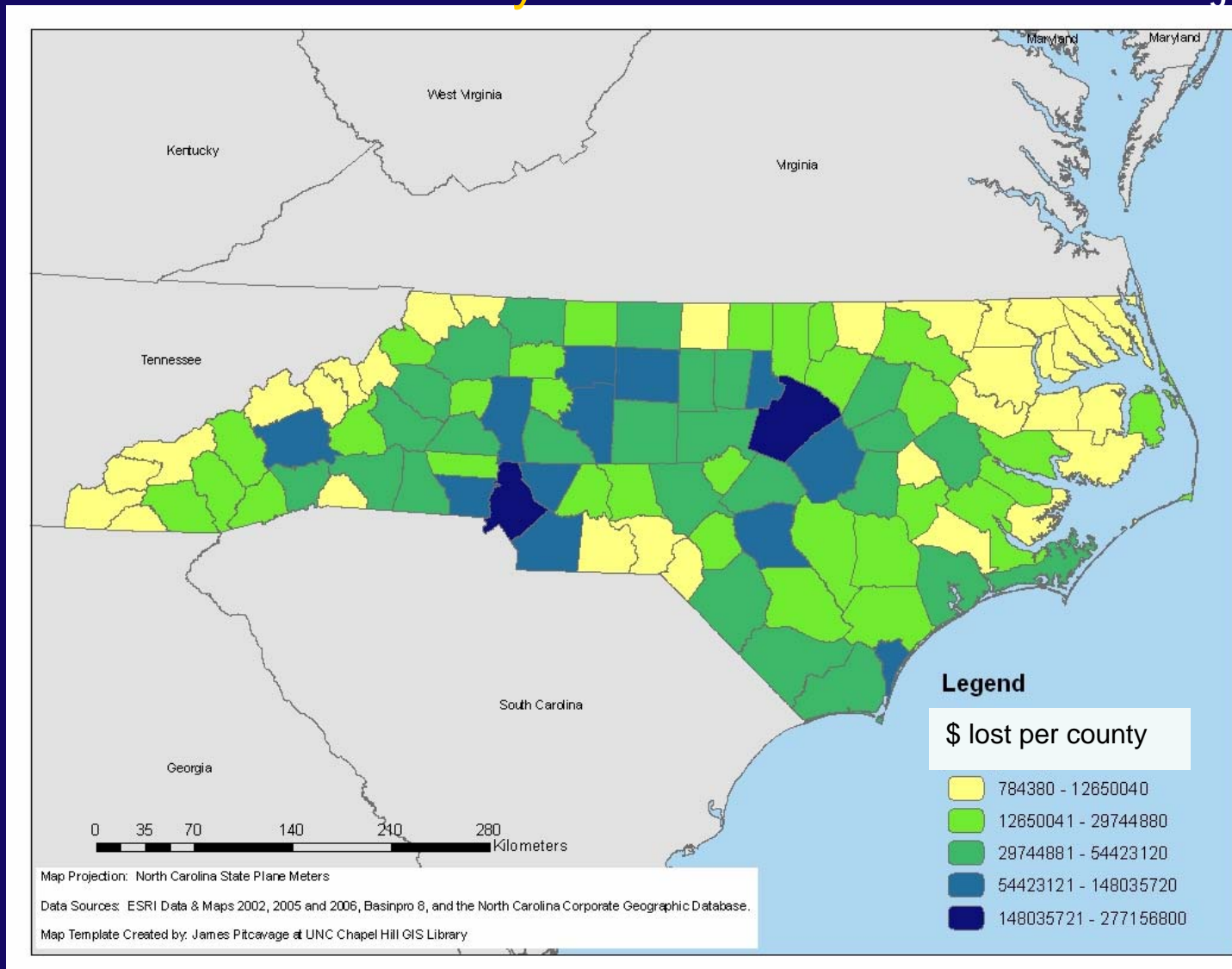
Cost of Trauma

- Trauma deaths cause great loss of productivity to the economy of North Carolina.
- Following slides calculate lost productivity due to trauma deaths.

Productivity Lost

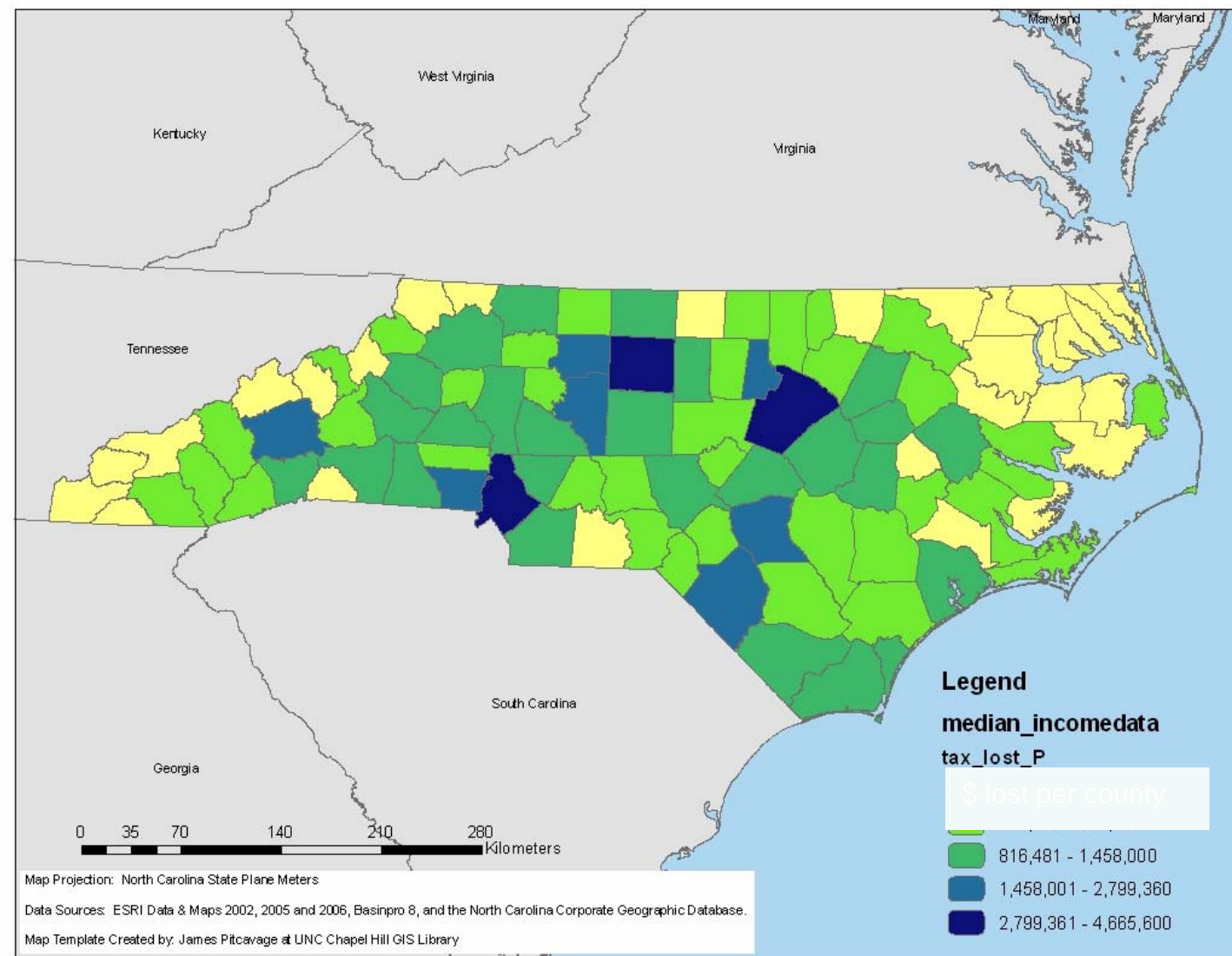
Costs & Funding

There is a loss of \$3.3 billion each year in North Carolina because of deaths related to trauma.



Tax Loss Due to Trauma Fatalities

The loss in productivity causes a yearly loss of \$79 million in state taxes for North Carolina.

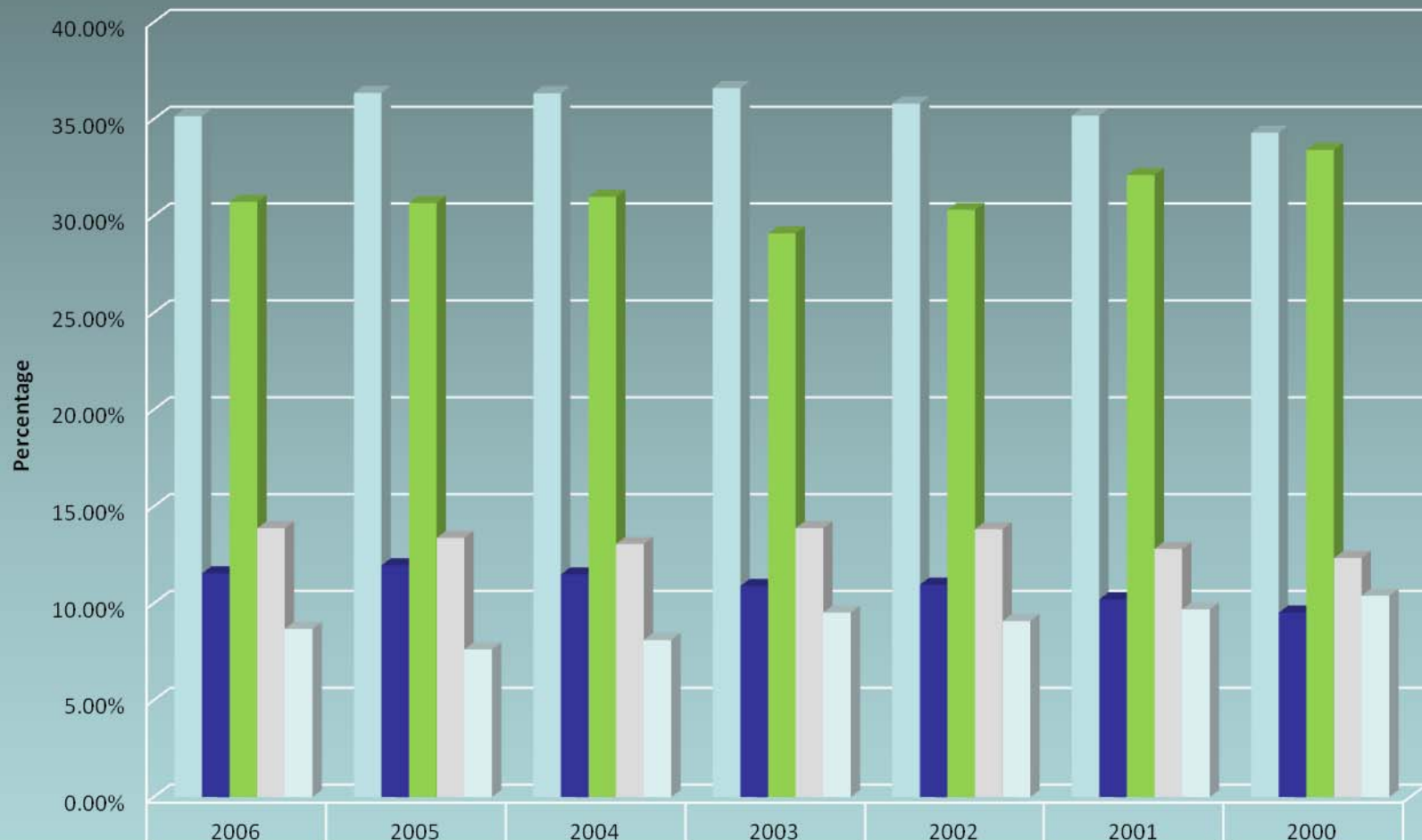


NC Trauma Finance

- A growing number of trauma patients are uninsured.
- Greater than 60% of trauma patients are Medicaid/Medicare or uninsured.
- Thus causing a great burden to hospitals with trauma programs

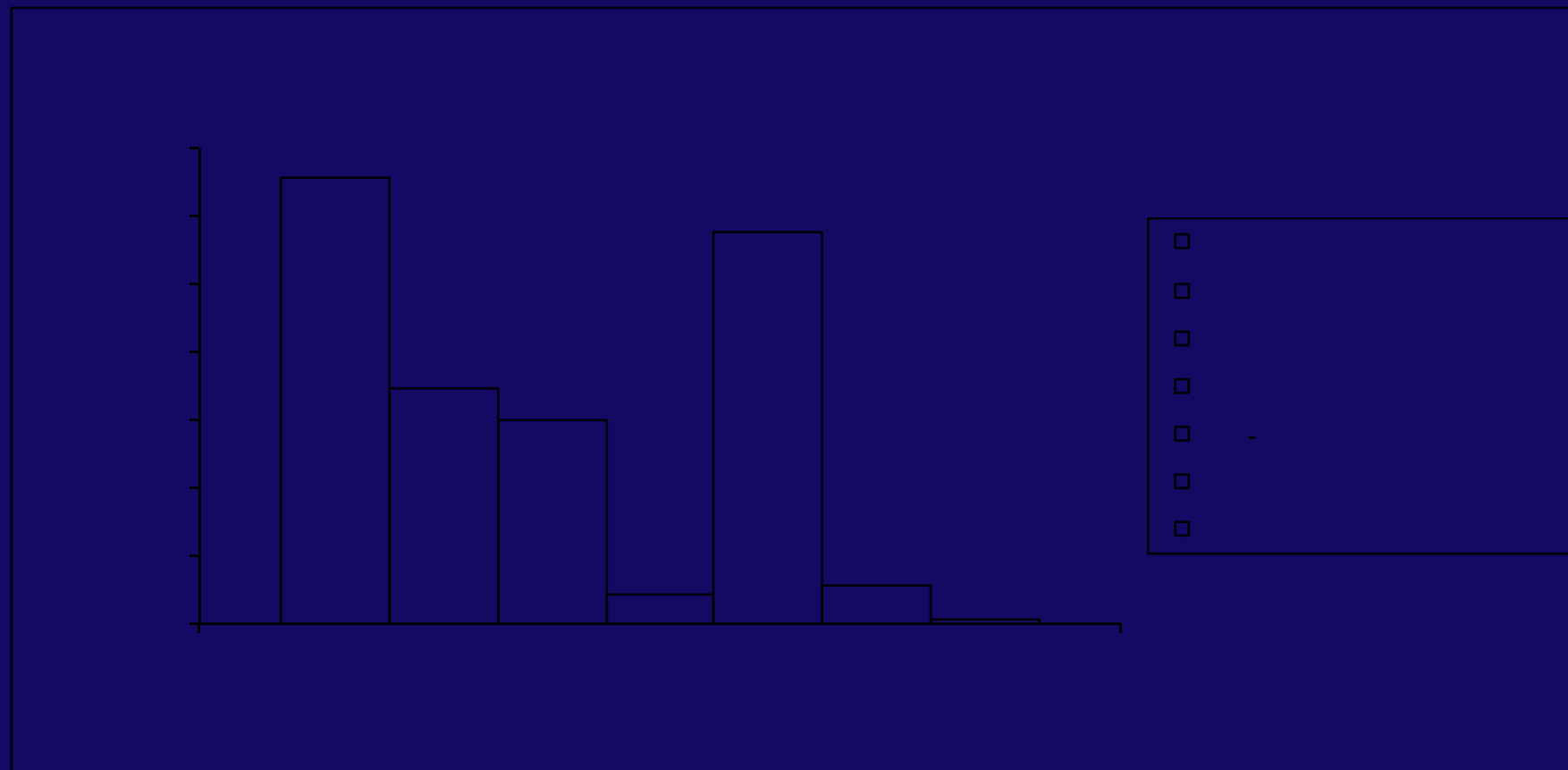
NC Trauma-Payor Type

Costs & Funding



Source: HCUP Databases. Healthcare Cost and Utilization Project (HCUP). 1998-2004. AHRQ, Rockville, MD.

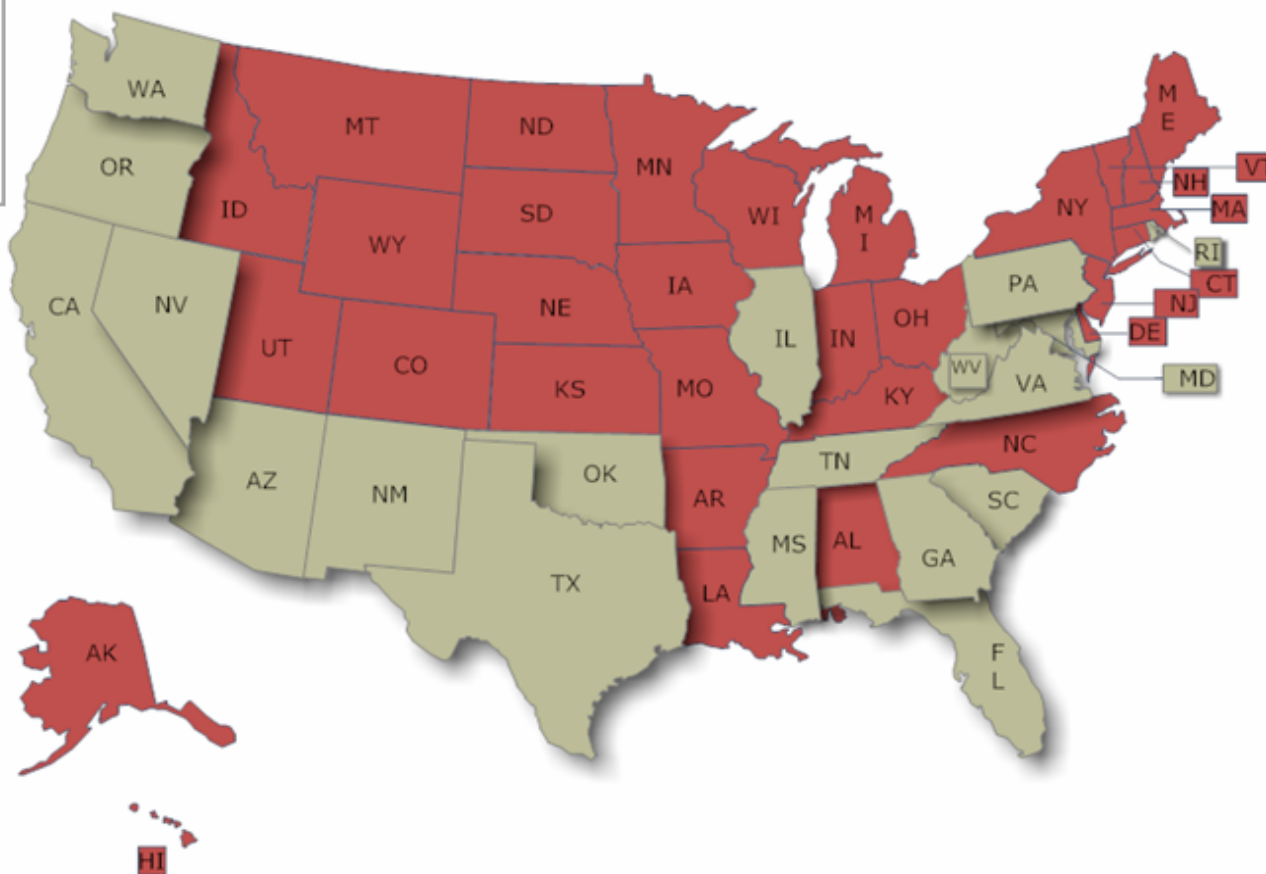
Trauma Reimbursement by Payor Source



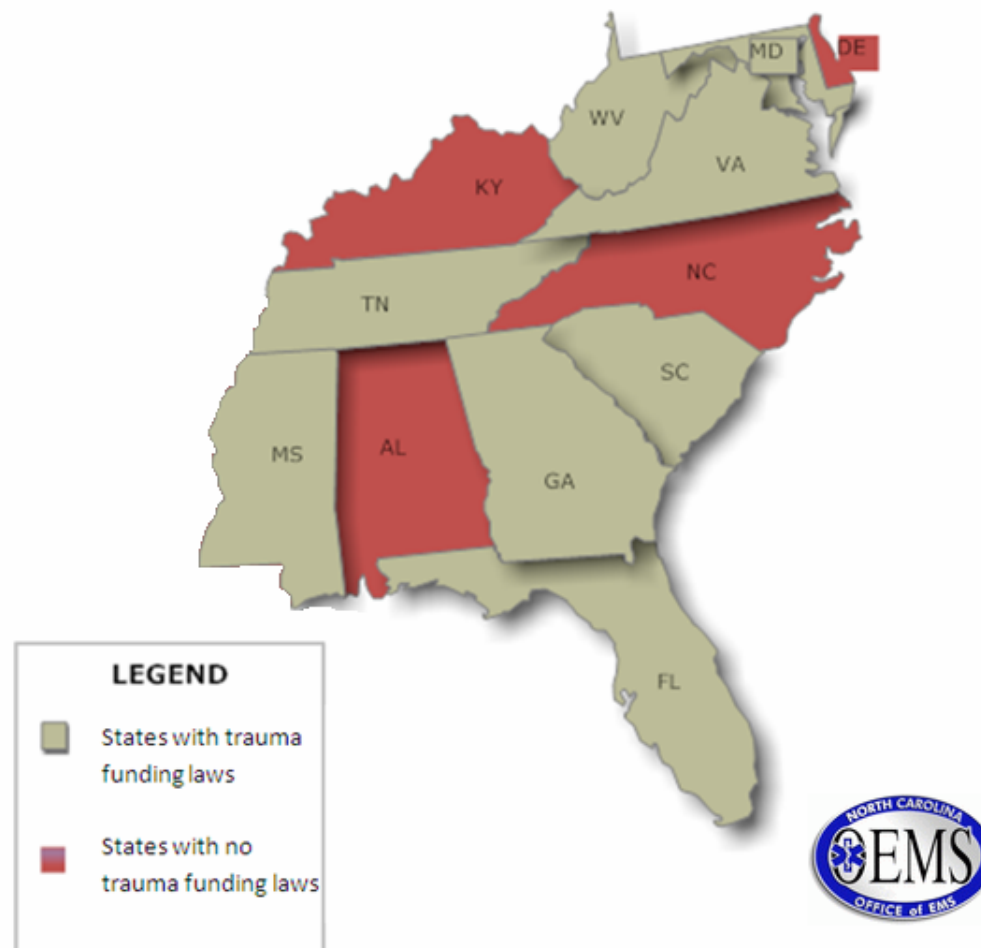


State Trauma Funding Laws

- States with trauma funding laws
- States with no trauma funding laws



Southeast Region-State trauma funding laws



Summary

- Trauma centers have a large impact in the outcome and costs of trauma patients
- Implementation of trauma systems is uneven...we need to better ensure that people get to a trauma center when they need one.
- The viability of many trauma centers is a major challenge to the state.

Where do we go from here?

- Build a strategy for development
- Seek funding to sustain and maintain the current system and future development
- Involve ALL stakeholders across the state and nation to address the problem
- Improve data collection